

In the Claims:

1-27 (deleted)

28. (New) A method for separating and recovering target polymers and their additives from a material containing polymers, comprising:

- a) the target polymer together with at least one additive is dissolved in a solvent I;
- b) the dissolvent target polymer with the at least one additive is mixed with a first part of a non-aqueous solvent II, which is miscible with the solvent I, the target polymer is precipitated while the at least one additive remains in dissolved form; and
- c) the precipitated target polymer and
- d) at least one additive present in liquid phase are separated; wherein the addition of the non-aqueous solvent II is effected in several stages.

29. (New) The method according to claim 28, wherein the polymer-containing material contains a polymer mixture; at least one further foreign polymer is dissolved in addition to the target polymer in step a); and the foreign polymers remain in dissolved form.

30. (New) The method according to claim 28, wherein the solvent mixture from b) is introduced with a nozzle.

31. (New) The method according to claim 28, wherein, as the target polymer, a polymer from the group of polyvinylchlorides, polycarbonates, polystyrenes and copolymers thereof, polyacrylates, polymethacrylates, polyethyleneterephthalates and polyvinyl butyral is separated.

32. (New) The method according to claim 28, wherein, as additives, halogen-containing flame retardants are separated and processed.

33. (New) The method according to claim 28, wherein, as additives, plasticisers are separated with polyethylene glycol and processed.

34. (New) The method according to claim 28, wherein the solvent I is selected from the group of the low molecular weight alcohols ( $C_1-C_5$ ), of the cyclic ethers, of the aliphatic and cyclic ketones, basic ester mixtures or a mixture of these.

35. (New) The method according to claim 28, wherein the solvent II is a low molecular weight alcohol ( $C_1-C_5$ ).

36. (New) The method according to claim 28, wherein, before step b), the target polymer dissolved in solvent I is separated from the non-soluble components in solvent I by physical separation methods.

37. (New) The method according to claim 36, wherein the physical separation method comprises filtration.

38. (New) The method according to claim 28, wherein the precipitated target polymer is isolated by a physical separation method.

39. (New) The method according to claim 28, wherein the precipitated target polymer is decanted and/or filtered off.

40. (New) The method according to claim 28, wherein the target polymer is dried after the separation.

41. (New) The method according to claim 40, wherein the drying is implemented at a temperature of more than 50°C.

42. (New) The method according to claim 28, wherein the separated and dried target polymer is re-extruded.

43. (New) The method according to claim 28, wherein the additives are recovered by distillation of the solution in step d).

44. (New) The method according to claim 28, wherein, in step d), the additives present in solution are recovered by chromatographic separation methods.

45. (New) The method according to claim 28, wherein, in step d), the additives present in solution are recovered by membrane separation methods.

46. (New) The method according to claim 28, wherein, in step d), the halogens are recovered from the halogen-containing additives present in solution by reduction of the flame retardants.

47. (New) The method according to claim 28, wherein the material containing polymers comprises plastic materials and/or plastic material containing materials which contain halogens.

48. (New) The method according to claim 28, wherein the material containing polymers comprises plastic materials and/or plastic material containing materials which contain plasticisers.

49. (New) The method according to claim 28, wherein the material containing polymer comprises material containing polyvinyl butyral the method further comprising forming the processed material into one of:

flat glass;

implosion and explosion protection materials for laboratory glass; and

soundproofing composite metal sheets or polymer coatings for sintered porous glass plates and shapes.

50. (New) The method according to claim 33, wherein the plasticisers comprise at least one of phthalic acid, adipinic acid and aliphatic carboxylic acids (C<sub>7</sub> - C<sub>8</sub>).

51. (New) The method according to claim 44, wherein the chromatographic separation method comprises one of ion-partition and adsorption chromatography.

52. (new) The method according to claim 32 wherein the halogenated flame retardants are selected from the group consisting of: polybrominated diphenylether (PBDE), polybrominated biphenyls (PBB), bis-(dibromopropoxy-dibromophenyl) -propane (OBPE) or bis-(tribromo-phenoxy)-ethane (TBPE)